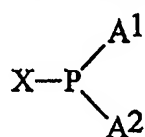


## ABSTRACT OF THE DISCLOSURE

A process is provided, in particular a continuous process for the carbonylation of butadiene by reacting the butadiene with carbon monoxide and a hydroxyl group-containing compound in the presence of a palladium catalyst system in a reaction zone to form a reaction mixture, said catalyst system comprising (a) a source of palladium cations, (b) a mono-, bi- or multidentate phosphine ligand, containing at least one phosphorus atom which is directly bound to two or three aliphatic carbon atoms, as process ligand to produce a palladium-phosphine ligand complex catalyst, and (c) a source of anions, said process ligand (b) containing the moiety shown in formula (I),



(I)

wherein A<sup>1</sup> and A<sup>2</sup> each represent an aliphatic carbon atom which can be connected to one or more aliphatic or aromatic carbon atoms or both A<sup>1</sup> and A<sup>2</sup> are part of an at least 5-membered ring including the phosphorus atom, and X represents an aliphatic or aromatic carbon atom which can be connected to one or more aliphatic or aromatic carbon atoms or X is part of an organic bridging group connecting another identically or differently substituted phosphorus atom, and said source of anions (c) containing a carboxylic acid and, optionally, halide ions, wherein said process ligand is fed continuously or periodically to the process as ligand make-up at a temperature 50°C or lower.